Microchannel Plate Detector and Methods for Their Fabrication

Technology available for licensing: A multi-component tunable resistive coating and methods of depositing the coating on the surfaces of a microchannel plate (MCP) detector.

- The resistive coating composed of a plurality of alternating layers of a metal oxide resistive component layer and a conductive component layer composed of at least one of a metal, a metal nitride and a metal sulfide.
- The coating may further include an emissive layer configured to produce a secondary electron emission in response to a particle interacting with the MCP and a neutron-absorbing layer configured to respond to a neutron interacting with the MCP.

Benefits:

- Improved thin film coatings that may be applied to a microporous substrate, including the surfaces of the channels within the substrate.
- The coatings comprise various multi-component resistive coatings that have a highly tunable resistivity that is controlled by modulating the composition and ratio of the coating components as well as the coating thickness.
- The coatings further include various emissive coatings responsive to electron interactions within MCP channels to yield secondary electron emissions.
- The present invention further relates to an improved method of fabricating neutron detectors.
- Utilizing the methods of the present invention, it is predicated that MCP detector fabrication cost may be reduced by more than a factor of 10 over conventional processes.

IN-10-029
US Patent No. 8,969,823